1982 D.A.T.E. PROGRAM REPORT

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1982
D.A.T.E. PROGRAM REPORT

Demonstration of Agricultural Technology and Economics

Submitted by:

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TERMS OF REFERENCE

The British Columbia Ministry of Agriculture and Food D.A.T.E. program makes available funds to assist in the introduction of advanced agricultural and economic techniques to the food supply system.

1982 Highlights

The D.A.T.E. (Demonstration of Agricultural Technology and Economics) Program continued in 1982 to fund projects aimed at demonstrating new advances in agricultural technology.

Program Highlights

- Seed variety trials in the Stikine Valley demonstrated that vegetables such as potatoes, rutabagas, beans, parsnips, cabbage and early sweet corn grow well in the area. A variety of fruits as well as forage and cereal seeds are under evaluation.

- A test for the purpose of controlling and eradicating flies in deep pit layer barns was conducted using permanently installed pressure tank sprayers. Optimum operating parameters were determined for the equipment and recommendations are being published.

- An integrated pest management program for the major insect pests of lettuce in B. C. including the lettuce aphid is under evaluation. Techniques for sampling lettuce plantings for aphid and caterpillar pests to formulate spray decisions were demonstrated and recommendations were given to growers.

- The demonstration of a water harvester, constructed near Cache Creek, to provide water for cattle on dryland range was undertaken. Methods of evaporation control were tested with the result that a floating cover of foam rubber was installed. The project aims to establish the economic benefits of the water harvester.

- A project to demonstrate crop and livestock production techniques to farmers using self-serve audio-visual programs at ministry offices was begun. This entailed the installation of two video-tape playback units and two 20-inch TV monitors. It is expected that an accurate assessment of the potential of this service will be possible after the winter.

Potatoes were grown on this demonstration plot in the Stikine Valley

PROJECT: No. 81

STIKINE VALLEY SEED VARIETY TRIALS

Project Supervisor:

C.G. Johnstone, District Agriculturist, B.C. Ministry of Agriculture and Food, Smithers

Co-operators:

- Bill Sampson, commercial grower
- Mark Stevens, Pat Armstrong and R. Bauer, Stikine Valley Residents

Branches:

Regional Extension Services

Funding:

80/81 - $400 81/82 - $400 82/83 - $1,500 83/84 - $1,500

Objectives:

To establish and publish horticulture recommendations for the Stikine Valley

Summary:

It has been demonstrated that vegetables such as potatoes, rutabagas, beans, parsnips, cabbage and early sweet corn grow well in the Stikine Valley.

In September, 1982, potato yields of total edible tubers were as follows:

Norland - 22.9 tons per acre
Kennebec - 21.9 tons per acre
Norgold Russet - 20.9 tons per acre

Fruit:

Species under evaluation include crabapples, apple crabs, pears, strawberries, currants and raspberries.

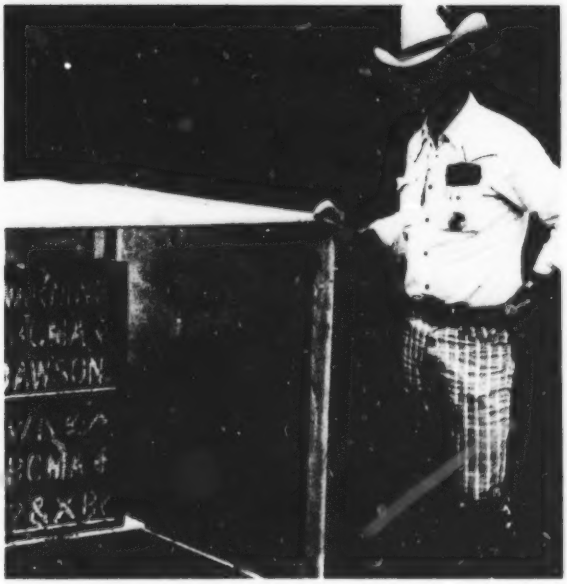
Forage and Cereal Seed:

June drought caused poor cereal growth, but late summer rains helped establish perennial forage crops. Adapted forage crops include alfalfa, alsike and red clover, birdsfoot trefoil, orchardgrass, bromegrass, timothy, slender wheatgrass and reed canary grass.
Birdsfoot trefoil grew vegetatively but did not set seed.
Forage yields were:

Revenue slender wheatgrass - 193 lbs/acre
Reed canary grass - Caster - 54 lbs/acre
- Vantage - 99 lbs/acre

Harvested September 1982, yield is calculated as pounds of clean seed per acre.

Cereal yields - Oats 60 bu/acre
Barley 40 bu/acre



Leafcutter bees were placed in alfalfa fields near Dawson Creek.

PROJECT: No. 84

DEMONSTRATION OF ALFALFA SEED PRODUCTION USING LEAFCUTTER BEES IN THE PEACE RIVER REGION OF BRITISH COLUMBIA

Project Supervisor:

Jack Dobb, Provincial Cereal, Oilseed and Seed Specialist, B.C. Ministry of Agriculture and Food, Dawson Creek

Co-operators:

- Don Pederson, bee-producer and farmer
- Frank Breault, farmer
- Agriculture Canada Research Station, Beaverlodge, Alberta
- Henry Gerber, Entomologist, B.C. Ministry of Agriculture and Food, Cloverdale

Branch:

Field and Special.Crops

Funding:

80/81 - $9,000 81/82 - $4,000 82/83 - $2,000

Objectives:

To demonstrate the economic feasibility of producing alfalfa seed in the Peace River region using techniques developed by Agriculture Canada involving the use of leafcutter bees to pollinate the alfalfa.

Summary:

The reduction of natural pollinators, due in part to land clearing in the Peace River area, has lowered alfalfa weed production.

Since honeybees do not pollinate alfalfa the establishment of leafcutter bees which do pollinate the flower is desirable. Research by Agriculture Canada at Beaverlodge, Alta. has produced a leafcutter bee capable of flying at the low temperatures in the Peacer River area.

From Saskatchewan, 220,000 cells were placed in an alfalfa field northwest of Dawson Creek in 1982 while 600,000 bees of the Beaverlodge strain were placed in two fields a mile apart, west of Dawson Creek. Extreme weather conditions are presenting management problems. As well, bee parasitism has been very high and the Vapona treatment for control of parasites may have caused a three-day delay in bee emergence.

PROJECT: No. 90

CARROT CAVITY SPOT

Project Supervisor:

D.J. Ormrod, Plant Pathologist, B.C. Ministry of Agriculture and Food, Cloverdale

Co-operators:

- J.F. Conroy, Vegetable Specialist, B.C. Ministry of Agriculture and Food, Cloverdale
- R.J. Copeman, Plant Pathologist, University of British Columbia
- G. Sprangers, L. and D. Law, P.Garvin, A. Stetar, G. Cowland, and T. Warhurst, vegetable growers.

Branch:

Crop Protection

Funding:

81/82 - $7,200 82/83 - $7,500

Objectives:

To evaluate various factors which may contribute to the occurrence of cavity spot in carrots and to develop a set of grower recommendations aimed at minimizing losses due to cavity spot.

Tests are made on bacterial cultures from carrot cavity spot lesions such as the one pictured above.

Summary:

Carrot cavity spot is a widespread and continuing problem for B.C. vegetable growers. The two-year trial period showed lower incidence of the disease than usual but field surveys indicated the disease is widespread. It was found in all fields surveyed in 1982, with 3 to 26 per cent of carrots being affected.

Data collected in variety trials are being analyzed to determine if resistance or tolerance is available. There are indications that excessive moisture promotes the disease. Data on the horticultural suitability of different varieties was collected.

A greenhouse trial was established to study the effects and interactions of soils, excessive moisture, and nitrogen fertilizer on the incidence of cavity spot. Seven soils were collected from areas with and without a history of a cavity spot problem. These were fertilized with either urea or calcium nitrate, and subjected to three different watering regimes. Data are being analyzed to determine if any significant effects occurred.

Pectolytic anaerobic bacteria of the genus Clostridium have been shown to cause cavity spot symptoms in the United Kingdom. Several isolates of pectolytic anaerobic bacteria have been cultured from cavity spot lesions of carrots from the Cloverdale area. Further testing is required for identification and to determine if these bacteria are pathogenic.

Left, soils specialists evaluate irrigated turf while (above) soils are tested at the lab.

PROJECT: No. 92

DATA COLLECTION ON TREATED MUNICIPAL WASTE WATER FOR EFFLUENT IRRIGATION

Project Supervisors:

Neville Gough, Soils Specialist and Craig Brownlee, Assistant Director, Soils Branch, Ministry of Agriculture and Food, Kelowna.

Co-operators:

- Steve Toth, foreman, Village of Osoyoos
- Lockie Miles, clerk administrator, Village of Osoyoos

Branch:

Soils

Funding:

81/82 - $500

Objectives:

1. To assess the fertilizer value of the effluent.
2. To study the effect of land disposal of waste water on soil nutrients.
3. To compare turf irrigated with effluent to turf irrigated with water.

Summary:

1. Average concentrations in pounds of available nutrients per acre-inch of effluent are shown below.

Nutrient			lbs/acre-inch of 1981 Effluent
Nitrate Nitrogen			3.14
Available Sulphur			6.67
"	Phosphorus	(May 11 - Aug. 10)	1.38
"	"	(Aug. 10 - Oct. 1)	0.34
"	"	(May 11 - Oct. 1)	0.97
"	Potassium		3.65

For no obvious reason two distinct levels of phosphorus were found. An increase of sulphur concentration during the sampling period was noted and could be attributed to the installation of a new domestic water supply in 1981. The average nitrate nitrogen level is high compared to sewage effluents collected throughout the province between 1965 and 1979.

The concentration ranges of other important effluent constituents are within desirable limits and are available upon request.

2. A longer period of study would be required to determine the effect of land disposal of waste water on soil nutrients.

3. Turf irrigated with effluent and given one application of nitrogen in early spring showed no chlorosis. This was also true for turf irrigated with normal water and given three applications of N-P-K fertilizer through the growing season. Plant tissue analysis for both turfs showed major differences in copper, iron and zinc levels--all higher in effluent irrigated turf.

Results of the analyses were made available to the South Okanagan Health Unit, the Village of Osoyoos and the consulting firm of Urban Systems Limited in Kamloops.

Brush is cleared with a rotary mower.

PROJECT: No. 93

DEMONSTRATION OF EQUIPMENT FOR DEVELOPING NATIVE WETLANDS

Project Supervisors:

Roly Kilpatrick, Agricultural Engineer, Engineering Branch, B.C. Ministry of Agriculture and Food, Abbotsford

Peter Fofonoff, District Agriculturist, B.C. Ministry of Agriculture and Food, Williams Lake.

Co-operators:

- Eric Reay, farm co-operator
- Martin Driehuyzen, Soils Branch, B.C. Ministry of Agriculture and Food, Cloverdale
- Sally Abbott, Bill Armstrong, Dave Kent, Information Services Branch, B.C. Ministry of Agriculture and Food, Kelowna
- Roger Keay, Economics Branch, B.C. Ministry of Agriculture and Food, Kamloops

Branches:

Engineering
Regional Extension

Funding:

81/82 - $9,800 82/83 - $4,800

Objectives:

Develop and demonstrate the special equipment and methods required to optimize forage production on native wetlands in the interior. All major activities including land clearing, water level control, cultivation and seeding and harvesting, are being filmed for use at short courses, workshops and seminars.

Summary:

Light brush clearing with a rotary mower, begun in December 1981, was to be completed in December, 1982.

Watercourse and ditch improvements were completed in 1981 and a dam was built in the spring of 1982.

Plowing, discing, and seeding took place in the fall of 1982 along with additional analysis of perimeter ditching methods.

One meadow development field day was held at Alkali Lake in 1981, followed by field days at Nimpo Lake and Watch Lake in 1982.

PROJECT: No. 94

FORAGE IMPROVEMENT PROGRAM FOR VANCOUVER ISLAND

Project Supervisor:

Peter Jones, District Agriculturist, Ministry of Agriculture and Food, Courtenay, B.C.

Co-operators:

- Vancouver Island Sheep Breeders' Association
- Field Island Angus Club

Branches:

Regional Extension Services
Field and Special Crops

Funding:

80/81 - $3,109 81/82 - $1,300

A district agriculturist evaluates forage on a Vancouver Island plot.

Objectives:

1. Evaluating new forage species for Vancouver Island
2. Compare pasture improvement methods using existing forage species.

Summary:

1. Seven species of grasses were sown in 1980. These grasses were subjected to fairly intensive grassland management. There was considerable variation in the Total Digestible Nutrient (TDN) and protein values among species throughout the grazing season. %TDN values varied from 56 to 81 and % protein from 8.9 to 27.6, both on a dry basis.

2. Pasture improvement methods

   One plot remained untreated as a control while other plots received a variety and combination of treatments including the application of high level fertilizers, sowing of fodder rape and grass legume mixture, grazing with sheep and cutting after grazing and spraying.

   Although May and June were unusually dry months, the plots that received the fertilizer treatments quickly improved in colour and, later in the season, in botanical composition. This was particularly true of the plots that received barnyard manure. The ryegrasses quickly became more evident and crowded out the rushes, which were cut back after each grazing.

The combination of a dry summer, high fertility and cutting the plots after each grazing quickly eliminated most of the rush plants.

Other important benefits were a much improved yield and quality of the herbage. This was especially noticeable after September when all growth ceased on the control and unfertilized plots, compared to high quality feed still growing in November on the other plots.

The seed multiplication plots at the Agriculture Canada Research Station, Sidney, established successfully. It is hoped to have this seed tested for adaptability at several sites in B.C. and Alberta in 1983.

An insecticide tank is installed in the layer barn utility room.

PROJECT: No. 96

FLY CONTROL IN DEEP PIT LAYER BARNS USING PERMANENTLY INSTALLED PRESSURE SPRAY TANKS

Project Supervisors:

Doug Hamilton, Poultry Specialist, Roly Kilpatrick, Agricultural Engineer, B.C. Ministry of Agriculture and Food, Abbotsford; Bob Costello, Entomologist, B.C. Ministry of Agriculture and Food, Cloverdale

Co-operators:

- Walter Janzen, commercial egg producer, Abbotsford
- Cory Spitters, Systems Designer, Peacock Industries, Aldergrove

Branches:

Poultry
Crop Protection
Engineering

Funding:

80/81 - $1,700 81/82 - $555

Objectives:

To control and eradicate flies in a deep pit layer barn using permanently installed pressure tank sprayers.

Summary:

This test ran from December 1981 to August 1982 in one of two 7,000 bird layer barns. Records were kept on fly numbers and spray treatment for both barns.

Optimum operating parameters were determined for the spraying equipment to control fly populations. Recommendations will be published.

PROJECT: No. 97

OVERWINTERING OF HONEYBEE QUEENS FOR COMMERCIAL USE

Project Supervisor:

D.M. McCutcheon, Apiary Specialist, B.C. Ministry of Agriculture and Food

Co-operators:

- B.C. Honey Producers' Association
- B.C. Honeybee Stock Improvement Project

Branch:

Apiculture

Funding:

81/82 - $3,975 82/83 - $4,124 83/84 - $1,780

Objectives:

To develop practical methods of overwintering large numbers of honeybee queens, and to demonstrate such methods in supplying commercial queen honeybee requirements in April and May.

Summary:

A successful method of overwintering queen bees in B.C. would create an economic opportunity for beekeepers and lessen dependence on U.S. producers.

Test results in 1981-82 were disappointing in that only 17 per cent of the queens survived. These, however, performed successfully. As a result of the demonstration, methods and equipment were revised to improve the survival rate.

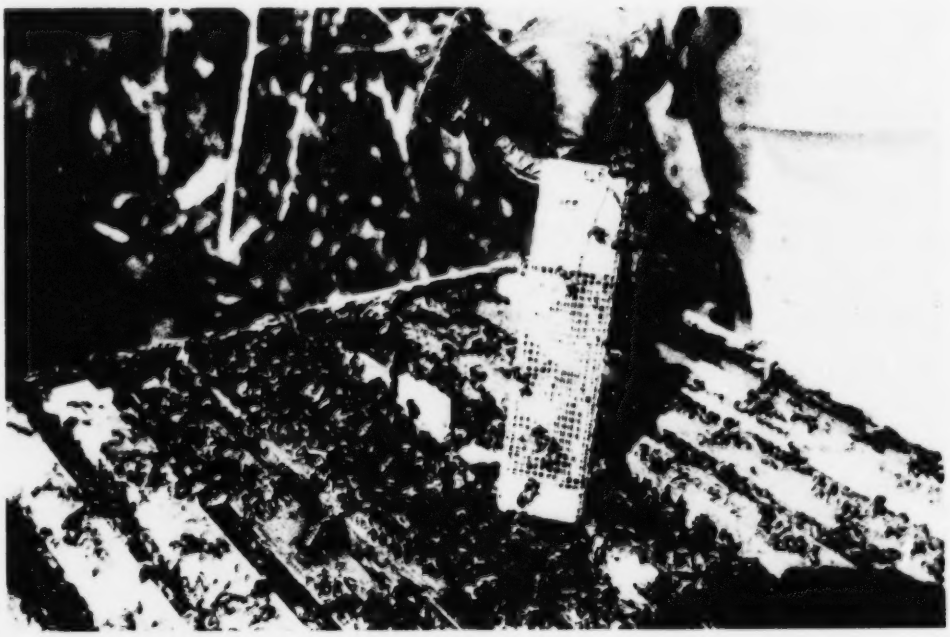
Four methods under evaluation in the 1982-83 tests are:

1. A standard hive body is divided in four compartments, each holding two standard-sized deep combs. This is used as a domicile for a nucleus colony (contains one queen). Results to date indicate this is the smallest practical domicile for the purpose.

2. Queens are stored, using the common "bank" method. They are kept in the regular queen shipping cages.

3. Cages with sides of 8 mesh hardware screen are used. Several cages, containing a queen each, are suspended between combs of a regular hive.

4. Queens are placed individually in 4 cm x 4 cm sections of the comb, surrounded by wooden sides, and covered by queen excluder material. This allows hive bees in to feed and groom the queen, but keeps the queen from escaping into the hive.



A cage of 8-mesh screen containing a queen is suspended between combs of a regular hive.

Several varieties of broccoli produced a quality product.

PROJECT: No. 98

EVALUATION OF VEGETABLE CROPS IN THE CENTRAL REGION OF BRITISH COLUMBIA

Project Supervisor:

G.S. Emmond, Regional Horticulturist, B.C. Ministry of Agriculture and Food, Prince George

Co-operators:

- Isaac Verhelst and Hildo Hoek, vegetable growers, Smithers
- T. Greengrass, vegetable grower, Prince George

Branch: Regional Extension Service

Funding:

81/82 - $550 82/83 - $2,650 83/84 - $2,250

Co-operator's contributed land and irrigation water

Objectives:

1) To evaluate the quality and yield of broccoli, cabbage and cauliflower varieties for field production,
2) To evaluate several plant densities of these crops for maximum yields and quality of product, and
3) To collect soil analysis data for vegetable crops.

Summary:

Several varieties of broccoli, cabbage and cauliflower produced a quality product. The broccoli varieties Shogun, Green Valiant and Emperor; the cabbage variety Red Debut and the cauliflower varieties Elgon, White Rock, White Top and Snowball 341 warrant further evaluation.

The plant density demonstration using the standard varieties Premium Crop broccoli, Stonehead cabbage and Dominant cauliflower showed several important trends. The size of the broccoli head and stem were effectively controlled by the density of the planting. A grower could use plant density to supply a market requiring a certain size broccoli head provided adequate fertilizer and soil moisture were available to the plant. Similarly, the size of cabbage heads can be controlled by plant density when early or mid season cabbage is grown. Overwintering cabbage was not evaluated. The size and quality of cauliflower heads appeared to be quite sensitive to plant density. Denser planting produced looser and lighter weight heads. Further plant density evaluation of all crops, particularly cauliflower is needed.

PROJECT: No. 99

THE APPLICATION OF INTEGRATED PEST MANAGEMENT TO LETTUCE PRODUCTION IN B.C.

Project Supervisor:

H.S. Gerber, Entomologist, B.C. Ministry of Agriculture and Food, Cloverdale

Co-operators:

- John R. Mackenzie, Research Technician (Agricultural Pest Management), Agriculture Canada
- Robert S. Vernon, Research Scientist, Agriculture Canada
- George Rush, Manager, Cloverdale Lettuce and Vegetable Co-operative
- Ted Warhurst, Gerry Spranger, lettuce growers
- Brian Johnston, Agricultural Consultant

Branch:

Crop Protection

Funding:

81/82 - $9,900 82/83 - $400

Lettuce seedlings are examined for aphids.

Objectives:

To evaluate through trial implementation, an integrated pest management program (IPM) for the major insect pests of lettuce in B.C., particularly the lettuce aphid, Nasonovia ribisnigri.

Summary:

Prior to 1982, commercial lettuce growers were able to minimize insect damage caused by the commonly encountered aphid and caterpillar pests by routinely spraying their fields. In 1981 this strategy failed for some growers when a new pest, the lettuce aphid was not adequately controlled by preventive sprays. In some fields, up to 100 per cent loss occurred. To address this problem, an IPM program based on regular insect surveys was evaluated in lettuce fields in the Clover Valley. The program was successful in determining when and where insecticide sprays should be applied. The effectiveness of currently registered insecticides for control of the major insect pests of lettuce including the lettuce aphid was assessed.

Techniques for sampling lettuce plantings for aphid and caterpillar pests and the accompanying criteria for spray decisions were demonstrated and issued to growers in written form. The most appropriate insecticides to use against specific insect problems were also conferred to growers through farm visits and through discussions at meetings with members of the Cloverdale Lettuce and Vegetable Co-operative.

This experimental deer fence constructed around an orchard near Vernon, is under evaluation.

PROJECT: No. 100

EVALUATION OF PENNSYLVANIA-TYPE ELECTRIC FENCES TO PROTECT FRUIT TREES AND HAYSTACKS FROM DEER AND ELK DAMAGE

Project Supervisor:

H.A. Kluge, Vertebrate Specialist, Crop Protection Branch, B.C. Ministry of Agriculture and Food, Summerland

Co-operators:

- G.G. Anderson, Senior Pest Control Officer, Crop Protection Branch, Kelowna
- C.G. Carter, Pest Control Officer, Crop Protection Branch, Vernon
- K.B. van Dalfsen, Agricultural Engineer, Engineering Branch, Summerland
- H.G. Geldart, Agricultural Economist, Economics Branch, Summerland
- J.B. Price, District Horticulturist, Vernon
- M.J. Malmberg, District Agriculturist, Cranbrook
- R. Ellis, Orchardist, Coldstream
- V. Kuntz, Rancher, Wycliffe
- E. Lacey, Manager, Okanagan Game Farm, Penticton

Branch:

Crop Protection

Funding:

81/82 - $159 82/83 - $2,910

Objectives:

1. To evaluate the Penn State 5-wire electric deer fence design, or modifications thereof, to exclude deer from orchards in the Okanagan Valley and elk from stackyards in the East Kootenays.
2. To compare the costs of construction, operation and maintenance of electric fences to the equivalent costs of conventional page-wire fences.

Summary:

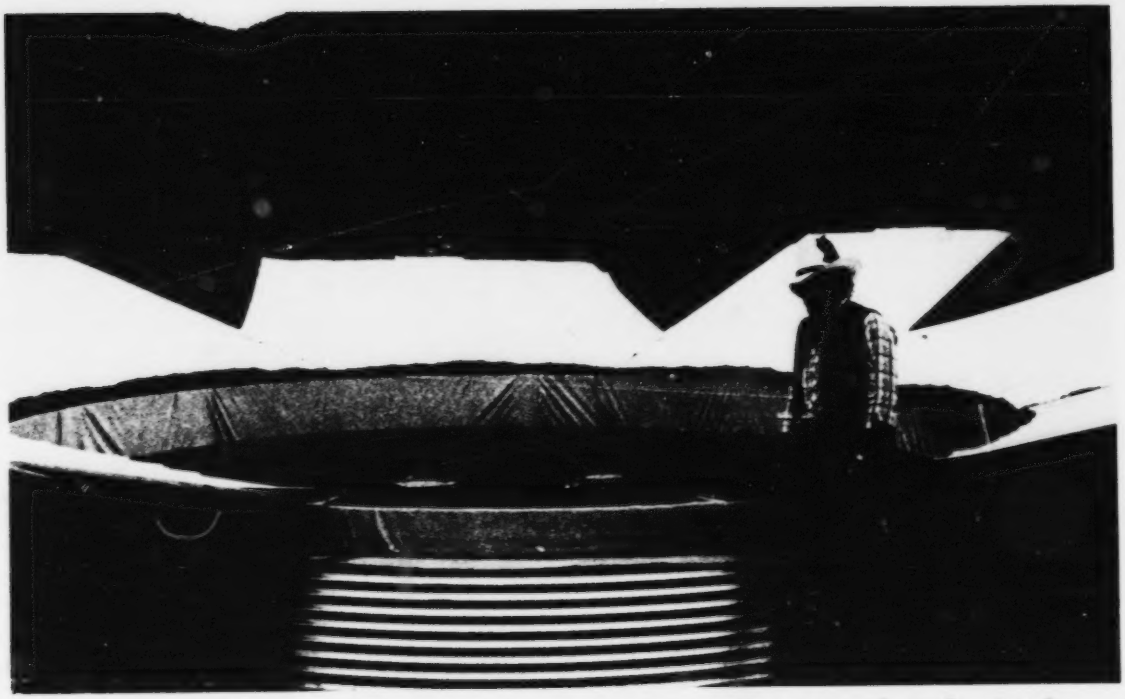
In June 1982, construction of the experimental deer fence was completed on a 12 ha orchard in Coldstream, near Vernon. A 350 m vertical 5-wire electric fence was erected around a 0.7 ha block of young apple trees which had been severely browsed by white-tailed deer in previous years. The major fence components are pressure-treated lodgepole pine posts, high-tensile galvanized smooth wire and a high-voltage, low-impedence energizer. Different designs of minor components and hardware, e.g. insulators, in-line wire fasteners and in-line wire tensioners, have been incorporated for demonstration and evaluation. Initially, the wire was installed as in the Penn State configuration, i.e. at 30 cm spacing to a height of 1.5 m, with alternating energized and ground return wires.

In October 1982, site layout and design for an experimental elk fence was completed for a cattle ranch in Wycliffe, near Cranbrook. A 464 m 6-strand electric fence will be constructed around a stackyard fenced with barb-wire and wooden slats. The existing fence has been inadequate to exclude elk and prevent serious damage to the haystacks in previous years.

Preliminary Results:

In August and September 1982, deer entered the Coldstream orchard block on a number of occasions. At first, the height of the fence along the south (uphill) side of the enclosure was increased from 1.5 m to 2.1 m by adding two strands of smooth wire at 30 m intervals. When damage continued, the height of the remaining three sides was also increased to 2.1 m by installing a single wire. The visibility of the top wires on all sides was enhanced by attaching strips of fluorescent orange flagging tape at 6 m intervals.

It is hoped that, with these minor modifications, the technology of high-tensile, high-voltage electric fences will offer an effective and economical alternative to conventional deer and elk fencing.



This water harvester was built east of Cache Creek.

PROJECT: No. 101

WATER HARVESTER FOR DRYLAND RANGE

Project Supervisors:

L.G. Brown, Engineering Technician, and A.H. Bawtree, Range Specialist, B.C. Ministry of Agriculture and Food, Kamloops

Co-operators:

- J.M. Christian, Kamloops Area Rancher

Branches:

Engineering
Field and Special Crops

Funding:

81/82 - $3,500 82/83 - $575

Objectives:

1. To demonstrate a water harvester to provide water for cattle on dryland range.

2. To establish the economic benefits of the water harvester versus traditional water delivery systems on dryland range.

Summary

Much of the dryland range of the Southern Interior has the capacity for increased forage utilization but lacks livestock watering facilities. A water harvester can provide water to suit any desired grazing system.

The design of the water harvester was finalized and construction completed by the first week in April, 1982 on a site east of Cache Creek. Various methods of evaporation control were tested with the result that a floating cover of low-density foam rubber was installed in August. A rain gauge was set on site to determine the efficiency.

As evaporation control was ineffective until mid-August, spring and early summer precipitation was lost. From August 13 to September 30, with evaporation control, catch efficiency was 82%. The water harvester is situated on a crested wheat grass seeding site which is grazed in April each year. First cattle use will be in April, 1983.

PROJECT: No. 103

SELF-SERVE AUDIO-VISUAL EDUCATIONAL PROGRAMS IN MINISTRY FIELD OFFICES

Project Supervisor:

R. Sera, Director, Information Services Branch, Victoria

Co-operators:

- Dave Kent, Coordinator, Media Production Center, Kelowna
- Bob Kohlert, Regional Director, Prince George
- Al Isfeld, Regional Director, Kamloops

Branches:

Information Services Branch

Funding:

81/82 - $4,200 82/83 - $6,000 83/84 - $6,500

Objective:

Demonstrate crop and livestock production techniques to farmers using self-serve audio-visual programs at ministry field offices.

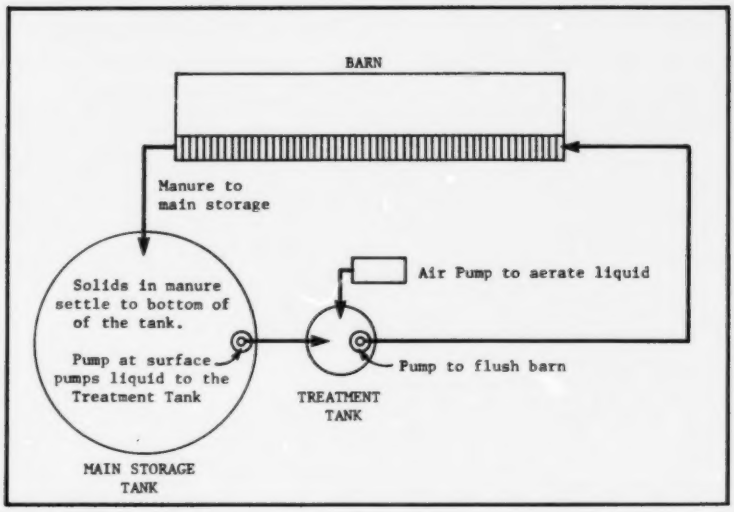
Video programs are being used as an extension tool in ministry offices at Prince George and Kamloops.

Summary:

Two half-inch video-tape playback units and 20" T.V. monitors were purchased and installed at the Prince George and Kamloops field offices in May, 1982. Seventeen video programs were either reproduced or purchased and made available at an on-site library. The programs were of general interest although predominantly oriented to livestock production and husbandry. The service was promoted via ministry newsletters and a news release to local newspapers.

Response to the machines was good when machines were available at events such as cattle sales, field days and agricultural fairs. During the summer, almost 500 farmers and ranchers either watched or inquired about programs being shown at these events. Very few farmers viewed the programs at ministry offices.

A more accurate assessment of the potential of this service will be possible following the fall/winter/spring period of ministry extension activity.


BARN
Manure to main storage
Air Pump to aerate liquid
Solids in manure settle to bottom of of the tank.
Pump at surface pumps liquid to the Treatment Tank
Pump to flush barn
TREATMENT TANK
MAIN STORAGE TANK

Plan for swine manure waste management system.

PROJECT: No. 104

LOW ENERGY SYSTEM FOR ODOUR CONTROL FOR HOG OPERATIONS

Project Supervisor:

Rick Van Kleeck, Agricultural Engineer, B.C. Ministry of Agriculture and Food, Abbotsford

Co-operators:

- R & H Research Farm, Aldergrove
- Dr. Ross Bulley, Bio-Resource Engineering, University of British Columbia

Branch:

Engineering

Funding:

82/83 - $2,750

Objectives:

To demonstrate a swine manure waste management system which would control odours originating from the flushing liquid in a hog barn. The proposed system aerates the liquid portion of the manure that is used for flushing.

Summary:

All manure from the barn enters a main storage tank where the solids are settled. Liquid from the top of the storage is pumped into a small treatment tank and aerated to remove obnoxious odours. The liquid is then used to flush the barn's gutters.

A report will be available in 1983 when design standards have been established.

Harvesting methods for lettuce, cabbage, broccoli and cauliflower could be improved with a harvesting aid.

PROJECT: No. 105

HARVEST AID FOR LETTUCE, CAULIFLOWER, CABBAGE AND BROCCOLI

Project Supervisor:

Roly Kilpatrick, Agricultural Engineer, Ministry of Agriculture and Food, Abbotsford

Co-operators:

- Yim Soo and Howe Wong, vegetable growers
- George Rush, Cloverdale Lettuce and Vegetable Co-op
- Jim Conroy, Vegetable Horticulturist, B.C. Ministry of Agriculture and Food, Cloverdale

Branch:

Engineering

Funding:

82/83 - $7,150

Objectives:

Design, fabricate and field test a trailer-mounted conveyor belt system to assist and improve present methods of harvesting lettuce, cauliflower, cabbage and broccoli. The harvest aid will facilitate picking, grading, boxing and palleting operations.

Summary:

The Engineering Branch studied picking, conveying, and packaging requirements for each vegetable crop. Several preliminary harvest aid designs were developed and discussed with the growers. Detailed design work is underway.

PROJECT: No. 106

SOIL EROSION CONTROL WITH INTERCEPTOR DRAINS

Project Supervisor:

R.C. Wood, Soil Specialist, B.C. Ministry of Agriculture and Food, Cloverdale

Co-operators:

- M.G. Driehuyzen, Soil Specialist, B.C. Ministry of Agriculture and Food, Cloverdale
- Nahar Mahal, farmer, Aldergrove

Branch:

Soils

Funding:

82/83 - $2,750
Co-operator's Contribution - Machinery

Objectives:

To evaluate the effectiveness of an interceptor drainage system in controlling runoff water and reducing soil erosion on steeply sloping land in row crops.

Summary:

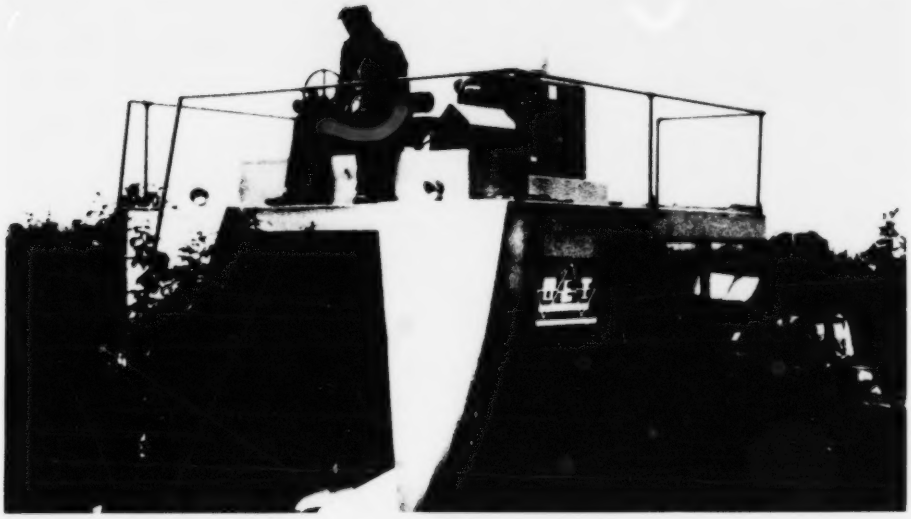
Forty-two per cent (25,000 ha) of the soils in Matsqui and Langley municipalities are subject to moderate to severe soil erosion during the winter months when they are clean-cultivated or in row crops such as strawberries, raspberries or cole crops.

A demonstration plot was established on the land of a co-operating farmer.

Cultivation of this land for these crops has occurred only in the last three or four years; previously, these lands were in permanent grass. Conventional soil erosion control methods, such as contour farming, strip cropping, and the use of winter cover crops, are not readily accepted by growers because these methods interfere with the preferred cultural practices used for growing these crops. One alternative method is the use of interceptor drains to control runoff water before it causes erosion.

A research and demonstration plot has been established on a co-operating farm in the Mt. Lehman area. The plot covers 0.27 ha. on a 6% to 8% slope 150 m long. One half is tile drained at 15 m spacing; and the other half is undrained. Apparatus for measuring runoff and eroded soil is placed at the downhill end of the plots. Runoff and erosion from the plot area will be measured over the course of the next two or three winters. In addition, four winter cover crops and a mulch treatment are established for observation this winter.

Field days will be held in late winter, when the visible effects of runoff and erosion are most noticeable.



As a result of demonstrations, a publication on the "fine tuning" of the raspberry harvester is being prepared.

PROJECT: No. 110

DEMONSTRATION OF OPTIMUM RASPBERRY HARVESTER OPERATION

Project Supervisor:

Roly Kilpatrick, Agricultural Engineer, Ministry of Agriculture and Food, Abbotsford

Co-operator:

- Siegfried Schulz, Abbotsford area raspberry grower

Branch:

Engineering

Funding:

82/83 - $2,750

Objectives:

Determine and demonstrate methods for selecting the optimum machine ground speed, beater amplitude and beater frequency for harvesting raspberries. A raspberry harvester use and adjustment manual will be written and distributed.

Summary:

A mechanical raspberry harvester's performance was evaluated and attempts were made to maximize the harvest rate while minimizing fruit loss and damage by adjusting various machine parameters. Optimum harvester settings varied from day to day, as well as throughout the day.

A publication and slide set on "fine tuning" the harvester is being prepared, and will be presented at the 1983 Lower Mainland Horticultural Improvement Association Growers' Short Course.

A portable flow meter is assessed by project participants.

PROJECT: No. 111

IRRIGATION EFFICIENCY TESTING PROGRAM

Project Supervisor:

Ted Van der Gulik, Agricultural Engineer, B.C. Ministry of Agriculture and Food, Abbotsford

Co-operators:

- Dr. S. Chieng, Bio-Resource Engineer, University of British Columbia
- J. Lee and C. Dyble, B.C. Hydro and Power Authority

Branch:

Engineering

Funding:

82/83 - $2,500

Objectives:

To implement a pump and irrigation system efficiency testing program to reduce the energy use requirement of B.C. farmers.

Summary:

A pilot test program conducted during the summer of 1981 indicated that a potential annual energy saving of $120,000 can be achieved province-wide by increasing the efficiency of irrigation pump and motor installations. The pilot study also indicated that a portable electronic flow meter would be required to implement the project successfully. The purpose of this project is to assess different types of flow meters and purchase the meter most suitable.

A smooth wire, high tensile fence was built and found to be both effective and economical.

PROJECT: No. 112

DEMONSTRATION OF BEEF PRODUCTION ON IRRIGATED PASTURE AND THE USE OF HIGH TENSILE SMOOTH WIRE FENCING

Project Supervisors:

E.L. Moore, Assistant District Agriculturist, L. Brown, Engineering Technician, B.C. Ministry of Agriculture and Food, Kamloops

Co-operators:

- A. Caldow, Farm Manager, Tranquille Farm, Kamloops

Branches:

Regional Extension Service
Engineering

Funding:

82/83 - $2,330 83/84 - $670

Objectives:

1. To demonstrate productivity of irrigated pasture in comparison to range for beef production.

2. To demonstrate alternative management techniques to improve beef production using a combination of range and irrigated land.

3. To determine the effectiveness of smooth wire, high tensile fencing under conditions of high cattle pressure.

Summary:

Initial results indicate that steers on irrigated pasture have an average daily gain almost double the gain of steers on range.

A group of steers placed on range from April 15 to June 30, then on irrigated pasture from July 1 to September 30, 1982, had an average gain per animal of approximately 280 pounds. The irrigated pasture used by this group also produced an additional two tons of hay per acre.

The smooth wire, high tensile fence was effective in most situations, and useful information was obtained on the construction and equipment requirements of this type of fencing, which is less expensive than barbed wire. The supervisors recommend this cost effective fencing for most range uses.

PROJECT: No. 114

EVALUATION OF FORAGE VARIETIES IN THE PEACE RIVER

Project Supervisor:

J.R. Green, Community Pasture Specialist, B.C. Ministry of Agriculture and Food, Dawson Creek

Co-operators:

- Keith Carrol, Plant Science Instructor, Northern Lights College
- Prespatou Livestock Association, Prespatou
- Farrell Creek Livestock Association, Fort St. John

Branch:

Field and Special Crops

Funding:

82/83 - $4,700 83/84 - $2,100

Objectives:

To demonstrate the productivity, longevity and grazing quality of approximately 50 forage varieties, both individually and in mixes, through establishment and monitoring of large scale forage nurseries at four community pasture locations in the Peace River area.

A forage nursery in the Peace River area is monitored for yield and grazing potential.

Summary:

Poor forage productivity is a major problem in community and private pastures. Substantial increases in production are possible if suitable pasture/hay species are used and good seeding practises employed.

Forage nurseries were established at Farrell Creek and Umbach pastures in June, 1982. The seven-acre sites were plowed, disced and harrowed early in May. A portion of each plot was sprayed with herbicide in late May.

The Farrell Creek nursery was seeded on June 16th and 17th. Umbach Nursery was established June 28th and 29th. Fifty-two varieties of grasses and legumes were seeded in 10' x 200' rows, using a 10' Brillion Seeder. Fifteen mixes were also seeded in 20' x 200' rows. Both sites were fenced.

Although severe drought conditions prevailed during May, June and most of July, the Farrell Creek Nursery established very well. The Umbach nursery which did not receive rain until September did not establish with the exception of wheatgrass.

Monitoring of Sunset and Cecil Lake Nurseries continued in 1982 and forage samples were collected for analysis.

The forage nurseries require a minimum of three years before results can form the bases for crop recommendations. The nurseries will be closely monitored each season for establishment, yield, longevity and grazing potential.

The sites are open to viewing throughout the grazing season.

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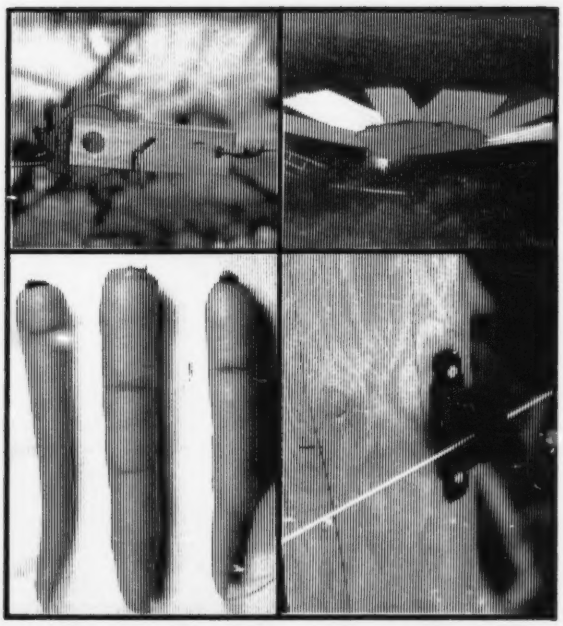

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